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REMARKS

Claims 10-18, 20, 22-23, and 25-30 are pending in the application. Claims 10, 20 and 23 are independent claims.

Applicants respectfully submit that the present application is in condition for allowance. Accordingly, reconsideration and allowance of the present application are respectfully requested.

Finality of Rejection

Applicants respectfully submit that the final rejections in the Office Action mailed April 17, 2007 are premature. In support thereof, Applicants respectfully note MPEP 706.07(a), which states that, under present practice, second or any subsequent actions on the merits shall be final, except where the Examiner introduces a new ground of rejection that is neither necessitated by Applicant's amendment of the claims nor based on information submitted in an information disclosure statement . . . .

Applicants respectfully submit that the Office Action mailed on April 17, 2007 introduced a new ground of rejection in regard at least to pending claim 10, which recites the subject matter of original claim 19.

Accordingly, Applicants respectfully request that the finality of the rejections be withdrawn (see MPEP 706.07(d)).

Oath/Declaration

The Office Action states that the originally submitted oath or declaration is defective because the mailing address did not include the zip code designation. Applicants submitted a Supplemental Application Data Sheet on May 10, 2006, which did not include all the information required by 37 CFR 1.76(b) and erroneously omitted Zirao Zheng as an inventor and had the incorrect citizenship for Dmitre Hristov. Additionally, Applicants did not intend to change the correspondence or representative information. Accordingly, Applicants are submitting a new Supplemental Application Data Sheet to comply with 37 CFR 1.76(b).

Reconsideration and withdrawal of the requirement are respectfully requested.

Claim Rejections – 35 USC § 103

The Office Action rejects claims 10-15 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,616,924 (Petrillo) in view of U.S. Patent No. 4,205,231 (Pochwalski).

The Office Action rejects claims 20, 22-23, 25, and 27-30 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,616,924 (Petrillo) in view of U.S. Patent No. 4,205,231 (Pochwalski) and U.S. Patent No. 5,003,572 (Meccariello et al.).

Reconsideration and withdrawal of the rejections are respectfully requested.

Claim 10

Independent claim 10 recites an apparatus comprising: a scintillator to emit light; imaging elements to capture image information based on received light; a first optical filter controllably movable from a first position between the scintillator and the imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements.

Neither Petrillo, nor Pochwalski, nor any proper combination thereof proposed in the Office Action, teaches or suggests the apparatus of claim 10.

Petrillo discloses optical enhancements to scintillating systems using dynamically controlled materials (title). With reference to FIG. 1, a diagnostic imaging system includes a gantry 10 which supports one or more radiation detectors 12a, 12b, 12c (col. 3, lines 29-31). With reference to FIG. 2, each detector includes a scintillation crystal 22 (col. 3, line 39-40). The scintillation crystal 22 converts the radiation received by the detector into light photons 26 (col. 3, lines 42-43). An optically transmissive plate 28 optically couples an array of photodetectors such as photomultiplier tubes 30 to the scintillation crystal (col. 3, lines 44-47). During a scan, radiation, such as γ radiation photons 50, entering the scintillation crystal is converted into light

photons or scintillations within the scintillation crystal 22 (col. 3, line 65-col. 4, line 1). To reduce the number of lost light photons, the receiving surface of the scintillation crystal 22 is polished and a liquid crystal layer 54 is laminated to it (col. 4, lines 5-8).

In another embodiment, the liquid crystal layer 54 is laminated to the exit surface of the scintillation crystal 22 between the scintillation crystal 22 and the glass plate 28 (col. 5, lines 5-11). Dynamically adjusting the dispersion properties of the liquid crystal controls the photon output of the scintillation crystal (col. 5, lines 8-10). With reference to FIG. 6, in yet another embodiment, a liquid crystal layer 54 is associated with the scintillation crystal 22 at the top, the bottom, and the side edges of the scintillation crystal (col. 5, lines 20-23). Optically coupling a liquid crystal layer 54 to a plurality of edges of the scintillation crystal 22 provides for XTAL boundary control (col. 5, lines 23-25).

However, none of the liquid crystals 54 appears to be controllably movable from a position between the scintillator and imaging elements to a position not between the scintillator and the imaging elements

Consequently, even if the scintillation crystal 22 constitutes a scintillator, as asserted in the Office Action, and even if each liquid crystal 54 shown in FIG. 6 constitutes an optical filter, as asserted in the Office Action, Petrillo does not appear to teach or suggest an apparatus that includes: a first optical filter controllably movable from a first position between the scintillator and imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in independent claim 10.

Pochwalski discloses a device for light flux attenuation, especially for additional quenching of scintillations at radionuclide activity determination (title). A scintillation quenching device shown in the drawing comprises a body 1 forming a counting chamber which contains a counting vial 2 optically coupled with photomultiplier tubes 3 and provided with a rotatable bush 4 rotating on bearing 5 (col. 2, lines 3-7). Between counting vial 2 and photomultiplier tubes 3 is a cylindrical spring 6 which is secured around counting vial 2 and rotative bush 4 (col. 2, lines 7-10). Rotation of the rotative bush 4 by the use of a transmission enables increase at will of the density of the spring turns around the counting vial 2 and reduction

of the spring around the rotative bush 4, and vice versa (col. 2, lines 11-15). This permits a variation of light flux attenuation between the counting vial 2 containing a solution of radioactive substance in a scintillator and photomultiplier tubes 3 (col. 2, lines 16-19). The spring turns may be fully withdrawn from the counting chamber, thus reducing the initial light attenuation caused by the spring to a practically negligible value (col. 2, lines 19-22).

However, as with Petrillo, Pochwalski does not teach or suggest an apparatus that includes: a first optical filter controllably movable from a first position between a scintillator and imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in independent claim 10.

The Office Action states that Pochwalski teaches that an adjustable light flux attenuator (e.g., spring 6 controlled by a transmission) may be fully withdrawn, thus reducing the initial light attenuation caused by the light flux attenuator. The Office Action further states that it would have been obvious to provide a plurality of optical filters which can be moved by a control in the apparatus of Petrillo, in order to obtain light attenuation that can be adjusted in fine increments from a practically negligible value (i.e., when all the optical filters are not between the scintillator and the imaging elements) to total attenuation (i.e., when all the optical filters are between the scintillator and the imaging elements).

Applicants respectfully disagree.

Applicants note the portion of Petrillo that discloses, with reference to FIG. 6, a liquid crystal layer 54 associated with the scintillation crystal 22 at the top, the bottom, and the side edges of the scintillation crystal (col. 5, lines 20-23). Optically coupling a liquid crystal layer 54 to a plurality of edges of the scintillation crystal 22 provides for XTAL boundary control (col. 5, lines 23-25).

Applicants also note the movable spring 6 in Pochwalski.

However, even if the system of Petrillo was modified such that the liquid crystals 54 (FIG. 6) at the top, the bottom, and/or the side edges of the scintillation crystal 22 were movable in a manner similar to the spring 6 in the device of Pochwalski, it appears that **only one** of such liquid crystals 54 (**i.e., the liquid crystal 54 (FIG. 6) shown between the scintillation crystal**

22 and photo multiplier tubes 30) would be movable from a position between the scintillation crystal 22 and the photo multiplier tubes 30 to a position not between the scintillation crystal 22 and the photo multiplier tubes 30.

To the extent that the Office Action proposes otherwise, such proposed combination and/or modification is improper. For example, although Petrillo shows a liquid crystal 54 (FIG. 6) at a position between the scintillation crystal 22 and photo multiplier tubes 30, neither Petrillo nor Pochwalski teach or suggest a second liquid crystal 54 at a position between the scintillation crystal 22 and photo multiplier tubes 30.

Consequently, even if the scintillation crystal 22 constitutes a scintillator, as asserted in the Office Action, and even if each liquid crystal 54 (FIG. 6) constitutes an optical filter, as asserted in the Office Action, the modified system would still not include: a first optical filter controllably movable from a first position between the scintillator and imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in independent claim 10.

Thus, neither Petrillo, nor Pochwalski, nor any proper combination thereof proposed in the Office Action, teaches or suggests an apparatus comprising: a scintillator to emit light; imaging elements to capture image information based on received light; a first optical filter controllably movable from a first position between the scintillator and the imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in independent claim 10.

Independent claim 10 should therefore be allowed.

In the event that the Examiner decides to again reject independent claim 10 based on Petrillo and Pochwalski (or any other art), the Examiner is kindly requested to explain, **with particularity**, how such art teaches or suggests an apparatus that includes: a first optical filter controllably movable from a first position between a scintillator and imaging elements to a second position not between the scintillator and the imaging elements; and a second optical filter

controllably movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in independent claim 10.

Claim 20

Independent claim 20 recites a method comprising: determining a radiation dose to be received by a scintillator; determining an expected amount of light to be emitted from the scintillator based at least on the determined radiation dose; and controlling a first optical filter and a second optical filter based at least on the expected amount of light, wherein the first optical filter is movable from a first position between the scintillator and imaging elements to a second position not between the scintillator and the imaging elements, and wherein the second optical filter is movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements.

Neither Petrillo, nor Pochwalski, nor Meccariello et al., nor any proper combination thereof proposed in the Office Action, teaches or suggests the method of claim 20.

As stated above, even if the system of Petrillo was modified such that the liquid crystals 54 (FIG. 6) at the top, the bottom, and/or the side edges of the scintillation crystal 22 were movable in a manner similar to the spring 6 in the device of Pochwalski, it appears that **only one** of such liquid crystals 54 (**i.e., the liquid crystal 54 (FIG. 6) shown between the scintillation crystal 22 and photo multiplier tubes 30**) would be movable from a position between the scintillation crystal 22 and the photo multiplier tubes 30 to a position not between the scintillation crystal 22 and the photo multiplier tubes 30.

Consequently, neither Petrillo, nor Pochwalski, nor Meccariello et al., nor any proper combination thereof proposed in the Office Action, teaches or suggests a method that includes: controlling a first optical filter and a second optical filter based at least on the expected amount of light, wherein the first optical filter is movable from a first position between a scintillator and imaging elements to a second position not between the scintillator and the imaging elements, and wherein the second optical filter is movable from a third position between the scintillator and the

imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in claim 20.

Independent claim 20 should therefore be allowed.

Claim 23

Independent claim 23 recites a computer-readable medium storing processor-executable process steps, the process steps comprising: a step to determine a radiation dose to be received by a scintillator; a step to determine an expected amount of light to be emitted from the scintillator based at least on the determined radiation dose; and a step to control a first optical filter and a second optical filter based at least on the expected amount of light, wherein the first optical filter is movable from a first position between the scintillator and imaging elements to a second position not between the scintillator and the imaging elements, and wherein the second optical filter is movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements.

Neither Petrillo, nor Pochwalski, nor Meccariello et al., nor any proper combination thereof proposed in the Office Action, teaches or suggests the computer-readable medium of claim 23.

As stated above, even if the system of Petrillo was modified such that the liquid crystals 54 at the top, the bottom, and/or the side edges of the scintillation crystal 22 were movable, in a manner similar to the spring 6 in the device of Pochwalski, it appears that only one of such liquid crystals 54 (i.e., the liquid crystal 54 (FIG. 6) shown between the scintillation crystal 22 and photo multiplier tubes 30) would be movable from a position between the scintillation crystal 22 and the photo multiplier tubes 30 to a position not between the scintillation crystal 22 and the photo multiplier tubes 30.

Consequently, neither Petrillo, nor Pochwalski, nor Meccariello et al., nor any proper combination thereof proposed in the Office Action, teaches or suggests a computer-readable medium storing processor-executable process steps, the process steps comprising: a step to control a first optical filter and a second optical filter based at least on the expected amount of light, wherein the first optical filter is movable from a first position between a scintillator and

imaging elements to a second position not between the scintillator and the imaging elements, and wherein the second optical filter is movable from a third position between the scintillator and the imaging elements to a fourth position not between the scintillator and the imaging elements, as recited in claim 23.

Independent claim 23 should therefore be allowed.

Dependent claims

Claims 2-18 and 26 depend from independent claim 10 and therefore should be allowed for at least the reasons set forth above with respect to independent claim 10.

Claim 22 and 27-28 depend from independent claim 20 and therefore should be allowed for at least the reasons set forth above with respect to independent claim 20.

Claims 29-30 depend from independent claim 23 and therefore should be allowed for at least the reasons set forth above with respect to independent claim 23.

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CONCLUSION

Accordingly, Applicants respectfully request allowance of the pending claims. If any issues remain, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact the undersigned via telephone at (650) 694-5810.

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